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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/19/2005

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EXAMINER

CHANG, EDITH M

ART UNIT

PAPER NUMBER

2637

DATE MAILED: 09/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/391,059	Applicant(s) PARTHASARATHY ET AL.	
	Examiner Edith M. Chang	Art Unit 2637	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 June 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16, 18 and 19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-8, 12, 13, 18 and 19 is/are rejected.
- 7) ☒ Claim(s) 4, 9-11 and 14-16 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 September 1999 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments/Remarks

1. Applicant's arguments filed on June 6, 2005, have been fully considered but they are not persuasive.

Drawing Objections

With respect to Figures 1, 4, 5, 6, 7, 8, 9, 10, 12, 13, 14 and 15 are "Prior Art".

Figure 1 of this application is disclosed in the FIGURE 1 of the Prior Art US Patent 5,914,988 and described in column 2 lines 28-31 and column 3 line 30 to column 4 line 40 ('988).

Figure 4 of this application is disclosed in the FIGURE 4 of the Prior Art US Patent 5,914,988 and described in column 2 lines 36-38, column 8 lines 33-34 and column 9 lines 53-64 ('988).

Figure 5 of this application is disclosed in the FIGURE 5 of the Prior Art US Patent 5,914,988 and described in column 2 lines 39-41 and column 8 lines 31-37 ('988).

Figure 6 of this application is disclosed in the FIGURE 6 of the Prior Art US Patent 5,914,988 and described in column 2 lines 42-44 and column 6 lines 58-62 ('988).

Figure 7 of this application is disclosed in the FIGURE 7 of the Prior Art US Patent 5,914,988 and described in column 2 lines 45-47 and column 7 line 1 to column 8 line 6 ('988).

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Figure 8 of this application is disclosed in the FIGURE 8 of the Prior Art US Patent 5,914,988 and described in column 2 lines 48-51 and column 8 line 38 to column 9 line 3.

Figure 9 of this application is disclosed in the FIGURE 9 of the Prior Art US Patent 5,914,988 and described in column 2, lines 52-54 and column 9, line 4 to column 10, line 5 ('988).

Figure 10 of this application is disclosed in the FIGURE 10 of the Prior Art US Patent 5,914,988 and described in column 2, lines 55-57 and column 10, lines 39-55 ('988).

Figure 12 of this application is disclosed in the FIGURE 12 of the Prior Art US Patent 5,914,988 and described in column 2, lines 61-64 and column 14, line 43 to column 15, line 5 ('988).

Figure 13 of this application is disclosed in the FIGURE 13 of the Prior Art US Patent 5,914,988 and described in column 2, lines 65-67 and column 11, lines 34 to column 12, line 5 ('988).

Figure 14 of this application is disclosed in the FIGURE 14 of the Prior Art US Patent 5,914,988 and described in column 3, lines 1-3 and column 12, lines 27-67 ('988).

Figure 15 of this application is disclosed in the FIGURE 15 of the Prior Art US Patent 5,914,988 and described in column 3, lines 4-6 and column 13, lines 1-38 ('988).

Hence, with respect to Figures 1, 4, 5, 6, 7, 8, 9, 10, 12, 13, 14 and 15 should be designated by a legend such as -- Prior Art --.

35 U.S.C. § 102(e) Rejection

Applicant argues that the reference of Hu does not describe or suggest producing "difference data representative of a difference between successive symbols of said re-encoded symbol data".

The reference Hu discloses in FIGURE 11 comparing the re-encoded data at current time n (symbol S_n) at the output of 965 to one input of 960, and the delayed re-encoded data at time $n-1$ (symbol S_{n-1}) at the output of 950 to another input of 960, to produce difference data representative to post-coder 977 (column 13, lines 57-67), wherein for example $Z_1=1$, $Z_0=0$ of the current symbol defines the point C (-3, +5) (column 13, lines 57-61) of the two constellation points (0,1,0) and (1,1,0) in the coset (the two points $R=-3$ and $+5$ with $Z_1=1$, $Z_0=0$, shown in 125 FIGURE 2) of the input data, the 960 compares the input symbol output from adder 950 (S_{n-1} , delayed) with two constellation points in the coset defined by inputs Z_1 and Z_0 ($R=-1$ & $R=+5$ shown in 125 FIGURE 2) of the current symbol S_n (column 13, lines 61-64), and the constellation point *closest* to the received delay symbol point (S_{n-1}) is determined (column 13, lines 64-67), so that the Z_2 is determined by the minimum *distance/difference (the closest)* between the input symbol output from adder 950 (S_{n-1}), the received delay symbol point (S_{n-1}), and the Z_0 , Z_1 of the S_n . Hence the output of the 960 to the input of 977 is difference data representative of a difference (closest, the minimum distance) between successive symbols (n current and $n-1$ delayed) of the re-encoded data from unit 50 & unit 47 as shown in FIGURE 11 ('988).

Drawings

2. The drawing was received on June 6, 2005. This drawing is accept.
3. Figures 1, 4, 5, 6, 7, 8, 9, 10, 12, 13, 14 and 15 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g).

Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

4. Claims 4, 10-11 and 13-16 are objected to because of the following informalities:

Claim 4, line 3: "of distance" should be "of distances", since *candidate values* represent of *distances* comprising a minimum one; line 7: "a prior delayed and fed back comparison representative output" should be "a prior delayed fed back comparison representative output" to be consistent with the claim 10.

Claim 10, line 4: "distance" should be "distances"; line 7: "a prior delayed and fed back comparison representative output" should be "a prior delayed fed back comparison

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representative output”, as the antecedent basis of “said prior delayed fed back comparison representative output” recited in the claim 11.

Claim 13, line 12: “computing an absolute distance” should be “computing absolute distances”, as the antecedent basis of “computed absolute distances” recited in claim 14 line 3.

Claim 14, line 3: “computed absolute distances” should be “the computed absolute distances” or “said computed absolute distances”.

Claim 15, line 7: “a prior delayed and fed back comparison representative output” should be “a prior delayed fed back comparison representative output”.

Claims 11 and 16 are dependent on the objected claims 10 and 15.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1-3, 5-8, 12-13, and 18-19 are rejected under 35 U.S.C. 102(e) as being anticipated by Hu et al. (US Patent 5,914,988).

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Regarding **claims 1, 5 & 8**, in FIGURE 1, Hu et al. teaches a decoder and its method, it comprises a delay element (70) for delaying the received DATA 1 (column 3 lines 30-35) to produce delayed data; a re-encoder (50) for re-encoding the received decoded data (output 40) to produce re-encoded symbol data; and a trellis demapper (processor 60, details shown in FIGURE 11, column 7 lines 22-26 wherein the distance is computed/provided) for feed-forward processing the re-encoded symbol data sequentially (column 13 lines 49-51) to produce difference data representative based on the RE-ENCODED DATA from the re-encoder (unit 50) and the delayed version of the re-encoded data (one symbol delay via 965 FIGURE 11) (column 14 lines 22-26, wherein the Z0 and Z1 are the re-encoded data) to select the sequential constellation points to derive the decoded data to byte assembler 90 (column 4 lines 29-34) via unit 977 (FIGURE 11) which is as the decision processor deriving the decoded data (column 13 lines 64-column 14 line 4).

Regarding **claims 2 & 6**, Hu et al. discloses the feed-forward processing is exclusive of feed-back processing wherein (which is) the delayed data (70->60 FIGURE 1) used in demapper.

Regarding **claims 3 & 7**, Hu et al. discloses the feed-forward processing prevents error induced by feed-back processing (FIGURE 11 977->970).

Regarding **claim 12**, Hu et al. discloses the processor derives decoded symbol data in a partial response system (10 FIGURE 1, column 3 lines 9-20).

Regarding **claims 13 & 18**, in FIGURE 1, Hu et al. teaches a decoder in a system for processing encoded data symbols and its method, it comprises a delay

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element (70) for delaying the received DATA 1 (column 3 lines 30-35) to produce delayed data; a re-encoder (50) for re-encoding the received decoded data (output 40) to produce re-encoded subset data (column 13 lines 60-64); and a trellis demapper (processor 60, details shown in FIGURE 11, column 7 lines 22-26 wherein the distance is computed) for feed-forward processing the re-encoded symbol data sequentially (column 13 lines 49-51) to produce difference data representative of the re-encoded data from the re-encoder (unit 50) and the delayed version of the re-encoded data (one symbol delay via 965) (column 14 lines 22-26, wherein the Z0 and Z1 are the re-encoded data) to select the sequential constellation points to derive the decoded data to byte assembler 90 (column 4 lines 29-34) via unit 977 which is as the decision processor.

Regarding **claim 19**, in FIGURE 1, Hu teaches the processor (60) using subset outputs from the re-encoder (50) instead of decoded bits themselves. In FIGURE 11, the processor uses the RE-ENCODED DATA from unit 50.

Allowable Subject Matter

7. Claims 4, 9-11 and 14-16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims, and overcome the objections set forth in this Office action.

8. The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record fails to teach or suggest, alone or in a combination, among other things, at least a decoder and its method as a whole, the combination of elements and features, which includes a processor for feed-forwarding processing the re-encoded symbol data including a comparator or a processor for comparing distance values computed by a processor for computing the distance values to determine the minimum distance value as recited in the claims.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

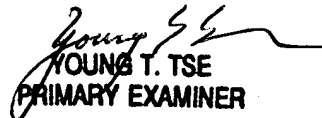
10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edith M. Chang whose telephone number is 571-272-3041. The examiner can normally be reached on M-F.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay K. Patel can be reached on 571-272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Edith Chang
September 14, 2005


YOUNG T. TSE
PRIMARY EXAMINER